A sub-committee of the LNF SC (Ralph Assmann, Patric Muggli, Lenny Rivkin, Gigi Rolandi) met with the LNF director Pierluigi Campana and Massimo Ferrario on September 14 2016 to discuss the progress of the EUSPARC project. Presentations of Ferrario and Campana are attached to the present minutes.

EUSPARC is a proposed new facility for the INFN-LNF site, that will bring together innovative RF technologies for 1 GeV beam energy and a state-of-the-art one Peta-Watt laser. This proposal builds on the highly successful SPARClab activity, essentially extending its capabilities by a factor 5-10, both in beam energy and laser power. EUSPARC reflects the available expertise and potential for excellence at the Frascati site. It will reuse many SPARClab components and makes optimal use of past investments.

EUSPARC proposes to collocate a 1 GeV linac (CBand or XBand) with a plasma acceleration of electrons to the same energy and offers a unique possibility to experimentally evaluate the applicability of these novel
methods of acceleration for future light sources. The proposed program of EUSPARC is rich on possible collaboration opportunities and synergies with other accelerator laboratories around the world where some of the proposed technologies (like the short period FEL undulators, both permanent magnet and RF based) have been taking place.

EUSPARC will be located in a new building of 130x35 m^2 including a 80x35 m^2 area for the infrastructure and a 50x35 m^2 area for users.

The extended capabilities of EUSPARC and the available space for application development have a high potential for creating excellence and international leadership. We expect that highly innovative accelerator technologies will be further advanced and excellent applications in various domains can be developed for Italian and European science.

EUSPARC is well connected to European projects, in particular the European network for novel accelerators (EuroNNAc) and the European Plasma Research Accelerator with eXcellence In Application (EuPRAXIA). EUSPARC scientists take leading responsibilities in these Horizon2020 projects. EUSPARC will position Italy as a strong candidate for a European research infrastructure based on ultra-compact plasma accelerators and their applications, as presently being proposed in the Horizon2020 project EuPRAXIA.

In the presentation we have seen that significant progress was made with the FLAME laser parameters and operation that led to the generation of relativistic electrons in the self-trapped regime. Interesting electron beam focusing results were obtained with the adiabatic plasma lens.

Numerical simulations of plasma wakefields show that, with beam and plasma parameters that will become available after the installation of the new accelerating structure in the linac, a GeV-range electron bunch with low enough energy spread and emittance should be produced to reach lasing at a wavelength of 10nm in a FEL undulator with period of 2.8cm (as available at SPARC_LAB) and in ~20m. The

feasibility of generating ultra-short electron pulses at 1 GeV within 30m of available space in the EUSPARC building needs to be further addresses. Calculations also show that a combination of the FLAME laser in the 1GeV electron beam foreseen for EUSPARC would allow generating by Compton scattering gamma rays with parameters sufficient to study positron generation and to enable very interesting astrophysics experiments in the laboratory.

EUSPARC schedule is driven by the EuPRAXIA schedule. EUSPARC is expected to deliver a CDR by the end of March 2017 and working groups have been formed taking advantage of the participation of many EUSPARC members to the EuPRAXIA project.